

FAVORABILITY OF FAGACEOUS FOLIAGE AS FOOD FOR *NOVACASTRIA NOTHOFAGI* SELMAN (COLEOPTERA: CHRYSOMELIDAE)

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Abstract

Young larvae of *Novacastria nothofagi* Selman, when transferred from foliage of their natural host, *Nothofagus moorei*, to foliage of other species of *Nothofagus* and Fagaceae, initiated feeding on a number of species, including all *Nothofagus* spp. tested, and sweet chestnut, *Castanea sativa*. Development to pupation was successfully completed only on the natural host and on one other species, *Nothofagus cunninghamii*.

Introduction

Novacastria nothofagi Selman, a leaf-beetle recently discovered on Antarctic beech, *Nothofagus moorei*, is of great taxonomic interest since it is an apparently isolated species linking the paropsine genera with many of the non-paropsine genera of the subfamily Chrysomelinae in Australia (Selman and Lowman, 1983). Australian Chrysomelinae feed mainly on hosts in the families Myrtaceae, Mimosaceae and Papilionaceae.

In its natural habitat, the temperate rainforests of northern New South Wales, *N. nothofagi* larvae were observed to feed exclusively on the spring foliage flush of *N. moorei* which is the sole representative of the family Fagaceae in these forests. Laboratory tests confirmed that *N. nothofagi* larvae would not feed on young foliage from other species (families Monimiaceae and Epacridaceae) associated with *N. moorei*, but rather wandered away from the foliage and died.

The family Fagaceae is represented in the temperate regions of the southern hemisphere only by the genus *Nothofagus*, which has a widely disjunct distribution, the extant species being relicts of a formerly richer flora (van Steenis, 1971). No other species of Chrysomelinae have been reported feeding on foliage of *Nothofagus* species. In this study, young *N. nothofagi* larvae collected from Antarctic beech foliage, were fed foliage of a range of *Nothofagus* species representing the temperate distribution of the genus, as well as on foliage of other species of Fagaceae.

Materials and methods

N. nothofagi larvae were collected on newly flushed, spring foliage of *N. moorei* near Armidale, New South Wales and airfreighted to Ridgley, Tasmania, where tests were undertaken on newly flushed spring foliage from arboretum specimens of *Nothofagus* species and other species of Fagaceae.

Feeding tests were carried out under normal photoperiod and temperature conditions in the laboratory. Five young larvae (first or second instar) were transferred from *N. moorei* foliage to fresh foliage of each test "host" placed in petri dishes on moistened filter paper. The remainder of the larvae were reared through to pupation on foliage of *N. moorei*. Foliage was changed at daily intervals, and a fine paint-brush was used to transfer the larvae.

Results and discussion

Results are shown in Table 1. Prolonged feeding was only maintained on one species (*N. cunninghamii*) in addition to the natural host and even this species may not support full development from eclosion; this aspect was not investigated. Feeding of *N. nothofagi* larvae on foliage other than that of the natural host has not been previously reported. Of the potential host species tested, the feeding activity was restricted to *Nothofagus* species with the exception of sweet chestnut, *Castanea sativa*.

Hill (1983) has postulated a close degree of relatedness between *N. moorei* and *N. cunninghamii* based on evidence inferred from Tasmanian macrofossils. The two species may have shared a common early Tertiary ancestor. The finding from the current study is further evidence for this close relationship. It is interesting that a niche similar to that occupied by *N. nothofagi* on *N. moorei* is apparently unoccupied by a species of *Novacastria* on *N. cunninghamii*.

TABLE 1
Feeding of *Novacastria nothofagi* larvae on foliage of various species of Fagaceae. (+ = feeding, - = no feeding and wandering)

"Host"	Area of origin	Feeding after 1 day	Feeding after 2 days	Reared to pupation
<i>Nothofagus moorei</i> (natural host)	N.S.W., Qld	+	+	+
<i>N. cunninghamii</i>	Tas., Vic.	+	+	+
<i>N. menziesii</i>	New Zealand	+	-	-
<i>N. obliqua</i>	Chile	+	-	-
<i>N. pumilio</i>	Chile	+	-	-
<i>Castanea sativa</i>	Europe	+	-	-
<i>Fagus sylvatica</i>	Europe	-	-	-
<i>Quercus robur</i>	Europe	-	-	-

* Of five larvae, three died but two were reared to pupation.

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References

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